

IN THE ABSTRACT OF THE DISCLOSURE

Please amend the Abstract to shorten it to 150 words or fewer as follows:

~~In a machine-vision system for inspecting a part, a method and apparatus to provide high-speed changing and/or automatic adjustment of illumination angle, dispersion, intensity, and/or color of illumination. One such system includes a light source emitting polarized light, a machine-vision imager that obtains an image, a processor coupled to receive the image, and operative to generate a quality parameter based on the image, and one or more of the various means as described above for selectively directing the light in a predetermined pattern based on its polarization and based on the quality parameter of the image. Another machine-vision system includes a machine-vision imager located along an optical axis, a controllable light source, a first optical element that selectively directs light in a first predetermined pattern relative to the optical axis based on light characteristics, a second optical element, that directs light in a second predetermined pattern relative to the optical axis, and an electronic controller operatively coupled to the imager and the controllable light source to control the light characteristics and thereby selecting one or more of the first and second predetermined patterns. A machine-vision method includes (a) setting one or more illumination parameters, (b) illuminating the object based on the one or more illumination parameters, (c) obtaining an image of the illuminated object, (d) generating a quality parameter based on an image quality of a predetermined region of interest in the image, and (e) iterating (b), (c), and (d) using a different illumination parameter.~~

In a machine-vision system for inspecting a part or other object, the invention provides a method and apparatus providing illumination with high-speed changing and/or automatic adjustment of not only the illumination's angle, but also the dispersion, intensity, and/or color. Optionally, a light source emits polarized light, a machine-vision imager obtains an image, and a processor receives the image and generates a quality parameter based on the image. One or more of the various means described selectively direct the light in a predetermined pattern based on its polarization and based on the quality parameter of the image. A machine-vision method includes setting one or more illumination parameters, illuminating the object based on the one or more illumination parameters, obtaining an image of the illuminated object, generating a quality parameter based on an image quality of a predetermined region of interest in the image, and iterating using a different illumination parameter.